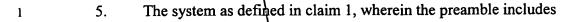


Therefore, having thus described the invention, at least the following is claimed:

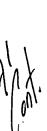
- 1. A system for robust transmission delimiting, comprising:
- 2 a communication message including a preamble, the preamble including a
- 3 plurality of bits representing communication link control information; and
- an encoder configured to encode the preamble bits into a plurality of symbol
- 5 indices, the symbol indices encoded at a lower bit per symbol rate relative to the
- 6 maximum rate capable of being supported over a communication channel.
- 1 2. The system as defined in claim 1, further comprising a gain boost element
- 2 configured to increase the energy of the first symbol index to reliably indicate the
- 3 beginning of the communication message.
- The system as defined in claim 2, wherein the energy of the first symbol
- 2 index is increased by 3 dB.
- 1 4. The system as defined in claim 1, wherein the preamble includes
- 2 information that defines a rate at which data following the preamble has been encoded for
- 3 transmission.



- 2 information defining a maximum rate at which a transceiver that is sending the preamble
- is able to receive transmissions from a transceiver that is receiving the preamble.
- 1 6. The system as defined in claim 1, wherein the preamble indicates whether
- a data portion follows the preamble and, if so, the format and type of data that follows the
- 3 preamble.
- 7. The system as defined in claim 1, wherein the preamble indicates whether
- 2 administrative information follows the preamble
- 1 8. The system as defined in claim 6, further comprising:
- a first scrambler configured to scramble the preamble; and
- a second scrambler configured to scramble the data.
- 1 9. The system as defined in claim 8, in which a state of the scrambler used to
- 2 scramble the bits that comprise the preamble is the state that\existed when scrambling of
- a previous preamble was completed.



- 1 10. The system as defined in claim 6, wherein the data portion of the
- 2 communication message comprises fixed size units, the fixed size units comprising a
- 3 plurality of bits and
- wherein the bits are encoded into symbol indices such that, for each of the fixed
- size units, one symbol index is encoded differently from the other symbols.
- 1 11. The system as defined in claim 10, wherein the differently encoded symbol
- 2 index further comprises an extra bit that indicates whether the fixed size unit from which
- 3 the other bits of the differently encoded symbol indices are obtained is the last one
- 4 transmitted in a message.
- 1 12. The system as defined in claim 10, wherein the differently encoded symbol
- 2 index is encoded at a data rate lower than that of the other symbols carrying message data.
- 1 13. A system for delimiting the end of a transmission, comprising:
- a communication message segmented into a plurality of fixed size units, each
- 3 fixed size unit including a plurality of bits; and
- an encoder configured to encode the plurality of bits into a plurality of symbol
- 5 indices at a first data rate, the encoder also configured to encode the first symbol index
- 6 containing only bits from each fixed size unit at a data rate lower than that of the first data
- 7 rate.

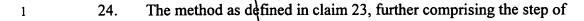


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1	14.	A method for robust t	ransmission delimiting, the method comprising the
			\
2	steps of:		

- applying a preamble to a communication message, the preamble including a 3 plurality of bits representing communication link control information; and
- encoding the preamble bits into a plurality of symbol indices, the symbol indices 5
- encoded at a lower bit per symbol rate relative to the maximum rate capable of being 6
- transmitted over a communication channel. 7
- 15. The method as defined in claim 14, further comprising the step of 1 increasing the energy of the first symbol index to reliably indicate the beginning of the 2
- communication message. 3
- The method as defined in claim 14\ further comprising the step of 16. 1 increasing the energy of the first symbol index by 3 dB. 2
- The method as defined in claim 14, further comprising the step of 17. 1 including information in the preamble defining a rate at which data following the 2 preamble has been encoded for transmission. 3
- The method as defined in claim 14, further comprising the step of 18. 1 including information in the preamble defining a maximum rate at which a transceiver 2 that is sending the preamble is able to receive transmissions from a transceiver that is 3 receiving the preamble. 4

- 1 19. The method as defined in claim 14, further comprising the step of using
- the preamble to indicate whether a data portion follows the preamble and, if so, the
- 3 format and type of data that follows the preamble.
- 1 20. The method as defined in claim 14, further comprising the step of using
- the preamble to indicate whether administrative information follows the preamble.
- 1 21. The method as defined in claim\19, further comprising the steps of:
- 2 scrambling the preamble using a first scrambler; and
- scrambling the data using a second scrambler.
- 1 22. The method as defined in claim 21, further comprising the step of $\frac{1}{2}$
- 2 scrambling the bits in the preamble using the state of the scrambler that existed when 🕺 :
- 3 scrambling of the previous preamble was complete.
- The method as defined in claim 19, wherein the data portion of the
- 2 communication message comprises fixed size units, the fixed size units comprising a
- 3 plurality of bits; and
- wherein the bits that comprise each of the fixed size units are encoded into
- symbol indices such that for each of the fixed size units, one symbol index is encoded
- 6 differently from the other symbols.

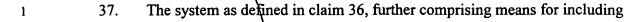


- 2 including in said differently encoded symbol index an extra bit that indicates whether the
- 3 fixed size unit from which the other bits of said differently encoded symbol indices are
- 4 obtained is the last one transmitted in a message.
- 1 25. The method as defined in claim 23, further comprising the step of
- 2 encoding the differently encoded symbol index at a data rate lower than that of the other
- 3 symbols carrying message data.
- 1 26. A method for delimiting the end of a transmission, the method comprising
- 2 the steps of:
- segmenting a communication message into a plurality of fixed size units, each
- 4 unit including a plurality of bits;
- encoding a plurality of the bits in the cells into a plurality of symbol indices, the
- 6 symbol indices being encoded at a first rate; and
- 7 encoding the first symbol index containing only bits from each fixed size unit at a
- 8 rate lower than that of the first rate.

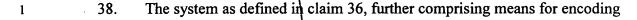


- 1 27. A system for robust transmission delimiting, comprising:
- 2 means for applying a preamble to a communication message, the preamble
- 3 including a plurality of bits representing communication link control information; and
- 4 means for encoding the preamble bits into a plurality of symbol indices, the
- symbol indices encoded at a lower bit per symbol rate relative to the maximum rate
- 6 capable of being transmitted over a communication channel.
- 1 28. The system as defined in claim 27, further comprising means for
- 2 increasing the energy of the first symbol index to reliably indicate the beginning of the
- 3 communication message.
- 1 29. The system as defined in claim 27, further comprising means for
- 2 increasing the energy of the first symbol index by 3 dB.
- 1 30. The system as defined in claim 27, further comprising means for including
- 2 information in the preamble defining a rate at which data following the preamble has
- 3 been encoded for transmission.
- The system as defined in claim 27, further comprising means for including
- 2 information in the preamble defining a maximum rate at which a transceiver that is
- sending the preamble is able to receive transmissions from a transceiver that is receiving
- 4 the preamble.

- 1 32. The system as defined in claim 27, further comprising means for using the
- 2 preamble to indicate whether a data portion follows the preamble and, if so, the format
- and type of data that follows the preamble.
- The system as defined in claim 27, further comprising means for using the
- 2 preamble to indicate whether administrative information follows the preamble.
- 1 34. The system as defined in claim 32, further comprising:
- 2 means for scrambling the preamble using a first scrambler; and
- means for scrambling the data using a second scrambler.
- The system as defined in claim 34,\further comprising means for
- 2 scrambling the bits in the preamble using the state of the scrambler that existed when
- 3 scrambling of the previous preamble was complete.
- The system as defined in claim 32, wherein the data portion of the
- 2 communication message comprises fixed size units, the fixed size units comprising a
- 3 plurality of bits; and
- means for encoding the bits that comprise each of the fixed size units into symbol
- 5 indices such that for each of the fixed size units, one symbol index is encoded differently
- 6 from the other symbols.



- 2 in said differently encoded symbol index an extra bit that indicates whether the fixed size
- 3 unit from which the other bits of said differently encoded symbol indices are obtained is
- 4 the last one transmitted in a message



- 2 the differently encoded symbol index at a data rate lower than that of the other symbols
- 3 carrying message data.
- 1 39. A system for delimiting the and of a transmission, comprising:
- 2 means for segmenting a communication message into a plurality of fixed size
- 3 units, each unit including a plurality of bits;
- means for encoding a plurality of the bits in (the cells) into a plurality of symbol
- 5 indices, the symbol indices being encoded at a first rate; and
- 6 means for encoding the first symbol index containing only bits from each fixed
- 7 size unit at a rate lower than that of the first rate.

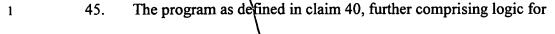


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- 1 40. A computer readable medium having a program for robust transmission
 2 delimiting, the program comprising logic for performing the steps of:
 3 applying a preamble to a communication message, the preamble including a
- encoding the preamble bits into a plurality of symbol indices, the symbol indices
 encoded at a lower bit per symbol rate relative to the maximum rate capable of being

plurality of bits representing communication link control information; and

- 7 transmitted over a communication channel.
- 1 41. The program as defined in claim 40, further comprising logic for 2 performing the step of increasing the energy of the first symbol index to reliably indicate 3 the beginning of the communication message.
- 1 42. The program as defined in claim 40, further comprising logic for 2 performing the step of increasing the energy of the first symbol index by 3 dB.
- 1 43. The program as defined in claim 40, further comprising logic for 2 performing the step of including information in the preamble defining a rate at which data 3 following the preamble has been encoded for transmission.
- 1 44. The program as defined in claim 40, further comprising logic for 2 performing the step of including information in the preamble defining a maximum rate at 3 which a transceiver that is sending the preamble is able to receive transmissions from a 4 transceiver that is receiving the preamble.



- performing the step of using the preamble to indicate whether a data portion follows the 2
- preamble and, if so, the format and type of data that follows the preamble. 3
- The program as defined in claim 40, further comprising logic for 46. 1
- performing the step of using the preamble to indicate whether administrative information 2
- follows the preamble. 3
- The program as defined in claim 45, further comprising logic for 47. 1
- performing the steps of: 2
- scrambling the preamble using a first scrambler; and 3
- scrambling the data using a second scrambler. 4
- The program as defined in claim 47, further comprising logic for 48. 1
- performing the step of scrambling the bits in the preamble using the state of the scrambler 2
- that existed when scrambling of the previous preamble was complete. 3





- 1 49. The program as defined in claim 45, wherein the data portion of the
- 2 communication message comprises fixed size units, the fixed size units comprising a
- 3 plurality of bits; and
- wherein the bits that comprise each of the fixed size units are encoded into symbol
- 5 indices such that for each of the fixed size units, one symbol index is encoded differently
- 6 from the other symbols.
- 1 50. The program as defined in alaim 49, further comprising logic for
- 2 performing the step of including in said differently encoded symbol index an extra bit that
- 3 indicates whether the fixed size unit from which the other bits of said differently encoded
- 4 symbol indices are obtained is the last one transmitted in a message.
- 1 51. The program as defined in claim \(\frac{1}{4} 9 \), further comprising logic for
- 2 performing the step of encoding the differently encoded symbol index at a data rate lower
- than that of the other symbols carrying message data.



